



## Two-month follow-up evaluation of a cancer awareness training workshop (“Talk Cancer”) on cancer awareness, beliefs and confidence of front-line public health staff and volunteers

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### ABSTRACT

People working across the health service, local government, community and voluntary sectors are appropriately placed to have discussions about cancer prevention and early diagnosis with members of the public. Cancer Research UK's training workshop (“Talk Cancer”) aims to increase awareness of cancer screening programmes and risk factors, promote more positive beliefs about cancer and increase confidence to discuss cancer with members of the public, among people working in these roles. This study evaluated “Talk Cancer” by surveying 178 trainees immediately before, immediately after, and two months after training in the United Kingdom.

Results showed that “Talk Cancer” was effective at promoting and maintaining more positive beliefs about cancer and confidence to discuss cancer. While there was an improvement in awareness of risk factors immediately after the workshop, there was less evidence that this was maintained at two-months, but awareness was improved relative to baseline in most cases. Increased awareness of the national bowel screening programme was maintained at two-months. While awareness that screening programmes do not exist for oral, skin and prostate cancers was not maintained, awareness was higher than baseline. The majority of trainees (86%) indicated they had applied their learning in their role and 59% reported having had more conversations about cancer prevention and early diagnosis since training. The impact of “Talk Cancer” on trainees' beliefs and confidence persists beyond the workshop, however, ongoing support is required to maintain improvements in awareness of cancer risk factors and which cancer types do not have national screening programmes.

### 1. Introduction

It is estimated that 1 in 2 people born in the United Kingdom (UK) after 1960 will be diagnosed with cancer (excluding non-melanoma skin cancer) at some point in their lifetime (Ahmad et al., 2015). While cancer survival rates improve, 5-year survival in the UK falls behind that of comparable countries (Coleman et al., 2011; Berrino et al., 2007). Cancer outcomes are poorer when diagnosed at a later stage and many cancers are diagnosed late (Office for National Statistics, 2016). National screening programmes can help to prevent or diagnose breast, prostate and colorectal cancers early, but attendance is falling for breast (NHS Digital, 2018) and cervical (NHS Digital, 2017a) screening, and is considerably lower for bowel screening (Public Health England, 2017). Those who display fatalistic beliefs about cancer are less likely to attend cancer screening, are less positive about the value of early detection and are more fearful about seeking help for a suspicious symptom

(Beeken et al., 2011; von Wagner et al., 2011; Marlow et al., 2018).

Approximately 38% of cancers could be prevented as a result of lifestyle behaviours (Brown et al., 2018), but public awareness of actual and mythical cancer risk factors is poor (Shahab et al., 2018). In England, 19% of men and 17% of women smoke, 27% of men and women have obesity, a further 41% of men and 31% of women have overweight, and 31% of men and 16% of women are drinking over 14 units of alcohol per week (Fuller et al., 2016). Furthermore, 27% of women and 24% of men are inactive and 24% of men and 27% of women eat  $\geq 5$  portions of fruits and vegetables (F&Vs) per day (NHS Digital, 2017b). People who display fatalistic beliefs about cancer are more likely to smoke, consume less F&Vs and engage in less physical activity (PA) (Niederdeppe and Levy, 2007).

In an attempt to improve cancer outcomes, the Cancer Strategy for England prioritised the need to support public health for cancer prevention, screening and early diagnosis (Independent Cancer Taskforce,

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2016). The Marmot review emphasised that responsibility for ill health prevention should be shared between local and national government, the National Health Service (NHS), third sector and community organisations in a ‘whole-system approach’ (Institute of Health Equity, 2010). The Cancer Strategy recognises this by highlighting initiatives such as ‘Making Every Contact Count’ (MECC) (Independent Cancer Taskforce, 2016). MECC encourages medically and non-medically trained staff working across the NHS, local authorities, community and voluntary sector organisations to opportunistically initiate brief discussions with patients/service users to support positive health behaviour change and disease prevention while helping to reduce local health inequalities, within their existing role (Public Health England and NHS England, 2016; Health Education England, n.d.-a; Health Education England, n.d.-b; North, 2011; Ion, 2011). For example, a study of 21 community pharmacies that had achieved ‘Healthy Living Pharmacy’ status (Pharmaceutical Services Negotiating Committee, n.d.), referred 1020 people with overweight to a local commercial weight management organisation and 59% of those achieved  $\geq 3\%$  weight loss over 12 weeks (Avery et al., 2017).

The Wanless report highlighted the need to build the capacity of the wider public health workforce to improve population-level health behaviours (Wanless, 2004) and the importance of upskilling front-line public health staff is commonly accepted (Hawe et al., 1997; Hughes, 2008). However, a survey of allied health professionals revealed that lack of confidence, knowledge and skills were significant barriers to initiating MECC-style conversations, particularly if it was not directly related to why they were seeing the client (Royal Society of Public Health and Public Health England, 2015). A ‘Healthy Conversation Skills’ training programme delivered to 145 health and social care practitioners working in children’s centres in the south of England showed a significant increase in confidence to discuss healthy eating and physical activity with service users after training (Black et al., 2014) and significantly greater use of the ‘Healthy Conversations Skills’ up to 1 year post-training compared to colleagues who were not trained (Lawrence et al., 2016).

Given that cancer prevalence is high, a significant proportion of cancers could be prevented through lifestyle behaviours and that cancer outcomes are significantly better if diagnosed earlier, it is vital that people working across the NHS, local government, community and voluntary sector organisations are equipped with the knowledge and skills to discuss cancer prevention and early diagnosis during their everyday interactions with members of the public. However, a survey of frontline healthcare staff in the UK found that awareness of many cancer risk factors was worryingly low and only 62% were aware of the national bowel cancer screening programme (Cook et al., 2011). Therefore, training to improve cancer awareness and confidence to have conversations about cancer prevention/early diagnosis is required. Some evaluations of training programmes aiming to improve community health workers’ knowledge and confidence in discussing breast and cervical cancers in low-middle income countries have been conducted (Bittencourt and Scarinci, 2017; Kienen et al., 2018; Ceber et al., 2010), but this has been less well explored in the UK.

Therefore, Cancer Research UK (a national cancer charity in the UK) developed the ‘Talk Cancer’ (TC) training workshop. A pilot evaluation revealed that trainees’ awareness of cancer risk factors and symptoms, and confidence in discussing cancer improved at one-month follow-up (Grimmett et al., 2014). However, this study did not link participant data and the follow-up period was relatively short. The aim of this study was to assess the extent to which improvements in awareness of cancer risk factors and screening programmes, beliefs about and confidence in discussing cancer achieved immediately after attending a TC workshop are maintained at two-month follow-up.

## 2. Methods

### 2.1. ‘Talk Cancer’ training

Workshops are held with up to 20 trainees and are aimed at an intentionally broad range of staff roles across the NHS, public health and local government, community and voluntary-sector organisations. Workshops are facilitated by two trainers with nursing backgrounds and practical experience of talking with the public about cancer prevention and early diagnosis, including via Cancer Research UK’s Cancer Awareness Roadshow (Smith et al., 2016). The content and delivery of TC was developed as a result of their experiences gained via the Cancer Awareness Roadshow and was reviewed by experts at Cancer Research UK to ensure it was evidence-based. TC aims to increase awareness of cancer screening programmes and risk factors (including commonly held misconceptions about risk factors – ‘cancer myths’), the importance of diagnosing cancer early, and address cancer fear and fatalism by promoting more positive beliefs about cancer. TC also aims to increase trainees’ confidence in discussing cancer, in signposting members of the public to behaviour change support and to their general practitioner (GP) in response to any persistent/unusual bodily changes. While the content remains consistent, the facilitators could tailor the delivery style, discussions, and application to the needs/roles of trainees attending each workshop. More details about TC have been published (Grimmett et al., 2014).

The aims of TC are similar to the MECC framework to ‘raise awareness, motivate and signpost people to help them improve their health and wellbeing’ (Public Health England and NHS England, 2016) and MECC draws upon evidence-based National Institute for Clinical Excellence guidance for behaviour change interventions (National Institute for Health and Care Excellence, 2014). While TC was not based on a psychological or behaviour change theory, it intends to equip trainees with the knowledge and confidence required to provide information and support on cancer prevention/early diagnosis and promote more positive beliefs about cancer. Knowledge/awareness, beliefs and confidence are included in many psychological/health behaviour theories (Michie et al., 2011; Ajzen, 1991; Rosenstock et al., 1988).

### 2.2. Study design and participants

Trainees completed a paper-based questionnaire immediately before (T0) and after (T1) attendance at TC and were followed-up two-months later via telephone (T2). Two month follow-up allowed trainees time to apply their learning and provided a more appropriate indication of participants’ recall of TC relative to immediately post-TC (T1). The same questions were asked at T0, T1 and T2, however additional questions about application of training were asked at T2. Trainees’ data were linked in a repeated measures design. Trainees were recruited for follow-up from November 2014–April 2015 until 200 trainees had been recruited. Difficulties with contacting trainees meant average follow-up time was 2.4 months (range = 2.0–3.7 months).

### 2.3. Measures

#### 2.3.1. Awareness of screening programmes

Trainees identified whether national screening programmes exist for six types of cancer (breast, bowel, cervical, oral, skin and prostate) using the following response options: ‘Yes’, ‘No’, ‘Don’t Know’. For breast, cervical and bowel screening programmes, ‘Yes’ responses were ‘correct’ and ‘No’/‘Don’t Know’ responses were ‘incorrect’. For oral, skin and prostate cancers, ‘No’ responses were ‘correct’ and ‘Yes’/‘Don’t Know’ responses were ‘incorrect’.

#### 2.3.2. Awareness of cancer risk factors

Items for awareness of cancer risk factors were adapted from the Cancer Awareness Measures (CAM) (Stubbings et al., 2009). Using

response options ‘Yes’, ‘No’, ‘There isn't enough evidence to say either way’, or ‘Don't Know’, trainees reported whether nine evidence-based cancer risk factors and three non-evidence based risk factors (“cancer myths”) could increase a person's risk of developing cancer. For smoking, exposure to another person's smoke, drinking alcohol, not eating enough F&Vs, eating too much red/processed meat, being an unhealthy weight, sunburn, older age and not doing enough PA, ‘Yes’ responses were ‘correct’. Any other responses options were ‘incorrect’. For “cancer myths” (using underarm deodorants, stress and using a mobile phone), ‘No’ responses were ‘correct’. Any other response options were ‘incorrect’.

### 2.3.3. Cancer beliefs

Trainees indicated the extent to which they agreed with the following statements: “I believe that if cancer is diagnosed early it is more likely to be treatable”, “I believe that a diagnosis of cancer is a death sentence”, “I believe there is nothing people can do to reduce their chances of developing cancer”, “I would find it hard to talk to someone about cancer” and “I would try to avoid talking to someone about cancer”. Response options were: ‘Strongly disagree’, ‘Tend to disagree’, ‘Tend to agree’, ‘Strongly agree’ and ‘Don't Know’. Responses were dichotomised such that those reporting ‘strongly disagree/tend to disagree’ formed a ‘Disagree’ group and those reporting ‘strongly agree/tend to agree’ formed an ‘Agree’ group. Given that those who provided a ‘Don't Know’ response could not be collapsed into either the ‘Agree’ or ‘Disagree’ groups, they were excluded for the analyses related to the 5 cancer beliefs items. This applied to  $\leq 5$  participants for each of these items across all time points.

### 2.3.4. Confidence in discussing cancer

Trainees identified whether they felt confident in their role to discuss the following with members of the public: ‘cancer in general’, ‘lifestyle changes that can help reduce cancer risk’, ‘where to go for more information and services to help make lifestyle changes to reduce cancer risk’, ‘what action they should take in response to any unusual or persistent changes to their body’ and ‘about the NHS cancer screening programmes available to them’. Response options were ‘not at all’, ‘not very’, ‘fairly’ and ‘very’ confident. Responses were dichotomised such that those who answered ‘not at all’ or ‘not very’ confident formed a ‘not confident’ group and those who reported ‘fairly’ or ‘very’ confident formed a ‘confident’ group.

### 2.3.5. Application of training

At T2, trainees indicated the extent to which they had applied their learning from TC in their role. Response options were: ‘not at all’, ‘a little’, ‘some’ and ‘a lot’. Trainees also indicated the frequency with which they had had conversations about cancer, to raise awareness or encourage changes to lifestyle, since training. Response options were ‘much less’, ‘a little less’, ‘no more or less’, ‘a little more’ and ‘much more’. Those who had had more conversations were asked to recall who those conversations had been with, and then who they had been *mostly* with in open-ended questions.

## 2.4. Statistical analyses

Data were analysed using SPSS v24. McNemar's tests determined within-item differences between T0 and T1 and between T1 and T2. A significant result between T0 and T1 indicated a difference between data collected immediately before and immediately after training. Given a significant result between T0 and T1, a non-significant difference between T1 and T2 indicated the effect was maintained at two-month follow-up. For measures where a maintained effect was not observed, McNemar's tests were conducted between T0 and T2 to assess whether data collected at two-month follow-up was significantly different to data collected before attendance at the workshop (baseline). This was important to determine when an effect had not been

**Table 1**  
Sample characteristics.

Characteristics	n (%)
Gender	
Male	19 (10.7)
Female	154 (86.5)
No data	5 (2.8)
Age	
20–29	26 (14.6)
30–39	26 (14.6)
40–49	34 (19.1)
50–59	54 (30.3)
60–69	14 (7.9)
70+	2 (1.1)
No data	22 (12.4)
Ethnicity	
Asian/Asian British	21 (11.8)
Black/Black British	13 (7.3)
Mixed ethnicities	4 (2.2)
White	127 (71.3)
Other	5 (2.8)
Prefer not to say	2 (1.1)
No data	6 (3.4)
Role	
Health trainer, health champion (or similar health promotion role)	32 (18)
Public health lead/project manager	28 (15.7)
Nurse	27 (15.2)
Administration/clerical	18 (10.1)
GP receptionist	10 (5.6)
Healthcare assistant	7 (3.9)
Pharmacist	2 (1.1)
Other pharmacy staff	4 (2.2)
Voluntary worker	10 (5.6)
Other local health staff	6 (3.4)
Other	26 (14.6)
No data	8 (4.5)

maintained at the same level as T1, but where there was an improvement relative to baseline.

## 3. Results

Of 200 trainees followed-up at two-months, linked data for each time point were available for 178 trainees. Sample characteristics are shown in Table 1. Trainees were mostly female, middle-aged, white, and were health champions/health trainers or worked within public health, nursing and administration roles.

### 3.1. Awareness of screening programmes

Table 2 shows change in awareness of cancer screening programmes. There was a significant improvement in awareness that national screening programmes exist for bowel cancer and do not exist for oral, skin and prostate cancers between T0 and T1. This improvement was only maintained between T1 and T2 for bowel cancer screening, however awareness was significantly higher at T2 for oral, skin and prostate cancers compared to T0 (all  $p$  values < .001). Awareness of breast and cervical screening programmes was very high at all three time points and no significant differences in awareness were observed.

### 3.2. Awareness of risk factors

Table 3 shows change in awareness of risk factors. Awareness of smoking was very high at all three time points and no significant differences were observed. For all other risk factors, awareness improved significantly between T0 and T1. Improvement in awareness was only maintained at T2 for sunburn and two “cancer myths”; using underarm deodorants and using a mobile phone. However, when awareness was not maintained at T2, awareness was significantly higher than at T0 for

**Table 2**  
Change in awareness of cancer screening programmes between T0 and T1, and T1 and T2.

Cancer screening programme	T0	T1	McNemar's test T0-T1		T2	McNemar's test T1-T2	
	Correct n(%)	Correct n(%)	n	p	Correct n(%)	n	p
Breast	168 (96.6)	173 (98.9)	171	.289 <sup>a</sup>	174 (97.8)	175	.625 <sup>a</sup>
Cervical	167 (96.5)	175 (98.9)	172	.125 <sup>a</sup>	169 (94.9)	177	.07 <sup>a</sup>
Bowel	147 (86.5)	172 (97.7)	169	.001 <sup>b</sup>	171 (96.1)	176	.549 <sup>a</sup>
Oral	80 (50.6)	146 (95.4)	140	< .001 <sup>b</sup>	146 (82.0)	153	.004 <sup>a</sup>
Skin	94 (59.1)	149 (95.5)	145	< .001 <sup>b</sup>	155 (87.1)	156	.035 <sup>a</sup>
Prostate	64 (38.8)	149 (94.3)	151	< .001 <sup>b</sup>	124 (69.7)	158	< .001 <sup>b</sup>

<sup>a</sup> Exact significance (2-tailed).

<sup>b</sup> Asymptotic significance.

stress ( $p \leq .001$ ), drinking alcohol ( $p = .031$ ), not eating enough F&Vs ( $p = .021$ ), eating too much red/processed meat ( $p = .036$ ), being an unhealthy weight ( $p \leq .001$ ), older age ( $p = .014$ ), and not doing enough PA ( $p \leq .001$ ). Exposure to another's smoke was the only risk factor which showed similar levels of awareness at T2 to before training, at T0.

### 3.3. Cancer beliefs

Table 4 shows change in cancer beliefs. There were significant increases between T0 and T1 in the proportion of trainees who agreed that 'if cancer is diagnosed early it is more likely to be treatable' and significant decreases in the proportion who agreed that 'a diagnosis of cancer is a death sentence', that they 'would find it hard to talk to someone about cancer' or that they 'would try to avoid talking to someone about cancer'. The changes in beliefs were maintained at T2 and the number of trainees who agreed that they 'would find it hard to talk about cancer', significantly decreased again between T1 and T2. There was no significant change for those who agreed there is 'nothing people can do to reduce their chances of developing cancer' between T0 and T1. However by T2, the number of trainees who agreed with this statement had significantly decreased.

### 3.4. Confidence in discussing cancer

Table 5 shows change in confidence in discussing cancer. There was a significant increase in confidence in discussing all cancer-related topics between T0 and T1 and this was maintained at T2 for all items except confidence in discussing NHS cancer screening programmes. However, the percentage of trainees who were confident in discussing

**Table 3**  
Change in awareness of cancer risk factors between T0 and T1, and T1 and T2.

	T0	T1	McNemar's test T0-T1		T2	McNemar's test T1-T2	
	Correct n(%)	Correct n(%)	n	P	Correct n(%)	n	p
<b>Risk factors</b>							
Smoking	176 (99.4)	175 (100)	174	1.000	175 (98.3)	175	.250 <sup>a</sup>
Second hand smoke	156 (90.2)	165 (94.3)	170	.021 <sup>a</sup>	154 (86.5)	175	.023 <sup>a</sup>
Alcohol	137 (79.2)	175 (98.9)	172	< .001 <sup>b</sup>	155 (87.1)	177	< .001 <sup>a</sup>
Insufficient fruit & vegetable intake	90 (54.5)	137 (79.2)	161	< .001 <sup>b</sup>	114 (64.0)	173	< .001 <sup>b</sup>
Excess red/processed meat intake	98 (59.4)	164 (93.7)	163	< .001 <sup>b</sup>	126 (70.8)	175	< .001 <sup>b</sup>
Excess weight	114 (69.1)	165 (95.9)	160	< .001 <sup>b</sup>	147 (82.6)	172	< .001 <sup>b</sup>
Sunburn	165 (94.3)	177 (100)	174	.002 <sup>a</sup>	174 (97.8)	177	.125 <sup>a</sup>
Age	99 (60.4)	168 (96.6)	161	< .001 <sup>b</sup>	121 (68.0)	174	< .001 <sup>b</sup>
Insufficient physical activity	67 (42.1)	151 (88.3)	156	< .001 <sup>b</sup>	103 (57.9)	171	< .001 <sup>b</sup>
<b>Myths</b>							
Deodorants	69 (41.3)	156 (91.8)	161	< .001 <sup>b</sup>	152 (85.4)	170	.164 <sup>b</sup>
Stress	29 (17.8)	162 (93.6)	159	< .001 <sup>b</sup>	117 (65.7)	173	< .001 <sup>b</sup>
Mobile phone usage	47 (28.3)	154 (89.0)	162	< .001 <sup>b</sup>	144 (80.9)	173	.055 <sup>b</sup>

<sup>a</sup> Exact significance (2-tailed).

<sup>b</sup> Asymptotic significance.

cancer screening programmes was significantly higher at T2 than T0 ( $p \leq .001$ ).

### 3.5. Application of training

86% of trainees reported having applied their learning in their current role; 32% had applied their learning a lot, 25% somewhat, 29% a little and 14% had not applied their learning at all. 105 trainees (59%) indicated they'd had a little more (36.5%) or much more (22.5%) conversations about cancer since training, while 69 (38.8%) reported having had a similar number of conversations about cancer. Conversations were mostly with clients/service users (21%), patients (13%), colleagues/staff members (10%) and family (10%). Only 4 trainees (2.3%) had fewer conversations about cancer.

## 4. Discussion

These results demonstrate that improvements in beliefs about cancer and confidence in discussing cancer with members of the public are maintained two-months after attending TC. Though there was an improvement in awareness of cancer risk factors immediately after TC, only awareness that sunburn is a risk factor and that deodorants and mobile phone usage are not, were maintained at two-months. For other risk factors where awareness was not maintained, the majority of items showed significantly higher awareness compared to baseline. Awareness of risk factors may not have been maintained because of widespread confusion between actual and mythical causes of cancer (Shahab et al., 2018). This highlights the need to provide ongoing support after training to help maintain the positive effects observed immediately after training. This is particularly important for modifiable

**Table 4**  
Change in cancer beliefs between T0 and T1, and T1 and T2.

Belief	T0	T1	McNemar's test T0-T1		T2	McNemar's test T1-T2	
	Agree n (%)	Agree n (%)	n	P	Agree n (%)	n	p
If cancer is diagnosed early it is more likely to be treatable	159 (93.5)	174 (98.3)	169	.039 <sup>a</sup>	176 (99.4)	176	.625 <sup>a</sup>
A diagnosis of cancer is a death sentence	26 (15.2)	4 (2.3)	168	< .001 <sup>a</sup>	3 (1.7)	171	1.000 <sup>a</sup>
There is nothing people can do to reduce their chances of developing cancer	12 (7.0)	12 (6.8)	170	1.000 <sup>a</sup>	2 (1.1)	174	.022 <sup>a</sup>
I would find it hard to talk to someone about cancer	48 (35.0)	16 (11.1)	134	< .001 <sup>b</sup>	10 (5.7)	143	.049 <sup>a</sup>
I would try to avoid talking to someone about cancer	23 (16.4)	8 (5.5)	169	.004 <sup>a</sup>	3 (1.7)	143	.180 <sup>a</sup>

<sup>a</sup> Exact significance (2-tailed).

<sup>b</sup> Asymptotic significance.

risk factors (e.g. weight, diet, PA, alcohol consumption) where trainees could have a meaningful impact in supporting health behaviour change. Awareness of the breast and cervical screening programmes was high across all three measurement points (likely due to ceiling effects) and the increase in awareness of the bowel cancer screening programme observed immediately after training, was maintained at two-months. The increase in awareness that oral, skin and prostate screening programmes do not exist was not maintained at two-months, but awareness was significantly higher than baseline. This may explain why confidence in discussing national cancer screening programmes was not maintained at two-months; if trainees were uncertain of which screening programmes exist, they may have felt less confident to discuss them.

This study is important given that awareness of cancer risk factors and of the national bowel screening programme is low among frontline healthcare staff in the UK (Cook et al., 2011) and that published evaluations of training programmes with similar aims are only available for community-health worker roles in low-middle income countries where the context is likely to differ considerably (Bittencourt and Scarinci, 2017; Kienen et al., 2018; Ceber et al., 2010). It is particularly encouraging that TC appeared to promote more positive beliefs about and confidence in discussing cancer. People who display fatalistic beliefs about cancer are less likely to attend cancer screening, are less positive about the value of early detection, and are more fearful about seeking help for a suspicious symptom (Beeken et al., 2011; von Wagner et al., 2011; Marlow et al., 2018). This can result in delayed presentation to health services and later-stage diagnosis (Lyrtzopoulos et al., 2015). People with fatalistic beliefs about cancer are also more likely to smoke, engage in less PA and eat fewer F&Vs (Niederdeppe and Levy, 2007). If people working in these roles have more positive beliefs about and feel more confident in discussing cancer, they may be more likely to have opportunistic conversations about the value of prevention and early diagnosis. This could in turn improve the cancer preventive and help-seeking behaviours of the public. Indeed, health and social care staff receiving 'Healthy Conversation Skills' training showed increased confidence in discussing healthy eating and physical activity with service users (Black et al., 2014) and staff who received training showed

significantly greater objectively-measured use of these conversations skills to support behaviour change up to 12-months post-training (Lawrence et al., 2016). While we were unable to measure application of training objectively, 86% of trainees said that they had applied their learning in their role, and 59% reported having more conversations about cancer since TC.

#### 4.1. Study strengths and limitations

This study builds on a very limited evidence-base regarding cancer awareness training programmes for front-line health and social care staff in the UK and builds upon an earlier pilot evaluation (Grimmett et al., 2014) by linking participant data and using a two-month follow-up period. However, the study has several limitations. The lack of control group means it is difficult to attribute the observed effects solely to attendance at TC. It is possible that trainees' awareness could have been affected by campaigns running during the study period. The only national cancer campaigns running during the study were related to symptom awareness of bladder/kidney cancers or oesophago-gastric cancers, and as symptom awareness is not examined in the current study, it is unlikely that national campaigns influenced these results. However, we are unable to rule out the potential impact that regional campaigns aiming to raise attendance at cancer screening programmes or awareness of risk factors could have had on the study. Two-month follow-up is relatively short and it would be interesting to measure longer-term impact (e.g. 12-months after attendance). The approach taken to commission follow-up of 200 trainees was not random and those who agreed to participate may differ from those who didn't, which may have induced bias. Baseline and post-training questionnaires were completed by the individual using a paper-based questionnaire, whereas two-month follow-up data was collected via telephone. The degree of social desirability/response bias may therefore differ, however it is likely that a telephone survey would increase follow-up retention compared to a paper-based postal questionnaire. It was also necessary to rely upon self-report regarding the application of training.

**Table 5**  
Change in confidence in discussing cancer between T0 and T1, and T1 and T2.

Confidence in discussing:	T0	T1	McNemar's test T0-T1		T2	McNemar's test T1-T2	
	Confident n(%)	Confident n(%)	n	p	Confident n(%)	n	p
Cancer in general	75 (44.4)	174 (99.4)	166	< .001 <sup>b</sup>	172 (96.6)	175	.063 <sup>a</sup>
Lifestyle changes that can help reduce cancer risk	95 (55.6)	172 (98.3)	168	< .001 <sup>b</sup>	172 (96.6)	175	.508 <sup>a</sup>
Where to go for more information and services to help make lifestyle changes to reduce risk	91 (53.5)	175 (99.4)	168	< .001 <sup>b</sup>	176 (98.9)	176	1.00 <sup>a</sup>
What action to take in response to any unusual or persistent changes in the body	137 (81.1)	174 (99.4)	166	< .001 <sup>b</sup>	175 (98.3)	175	.625 <sup>a</sup>
NHS cancer screening programmes available to members of the public	104 (61.5)	173 (99.4)	165	< .001 <sup>b</sup>	170 (95.5)	174	.039 <sup>a</sup>

<sup>a</sup> Exact significance (2-tailed).

<sup>b</sup> Asymptotic significance.

## 5. Conclusion

This evaluation demonstrated that TC was particularly effective at maintaining more positive beliefs about and confidence in discussing cancer with members of the public. While there was an immediate improvement in awareness of cancer risk factors after training, there was limited evidence that this was maintained at two-month follow-up, but this was higher than baseline for the majority of items. Increased awareness of the national bowel cancer screening programme was maintained at two-months, and while increased awareness that oral, skin and prostate screening programmes do not exist was not maintained, awareness at follow-up was higher than baseline. The majority of trainees indicated that they had applied their learning in their role and over half reported having had increased conversations to raise awareness of cancer or lifestyle changes to reduce risk. To further improve the effectiveness of the workshop, attention should be focused on improving the sustainability of improvements in awareness of cancer risk factors (and other measures where the immediate effect was not maintained). This could be achieved by providing additional follow-up support and ongoing learning/support opportunities for trainees, such as regular email updates, and e-learning opportunities such as webinars or videos and such options are currently being explored.

## Ethics approval

Cancer Research UK carries out all research according to the MRS Code of Conduct.

## Conflicts of interest

AR was funded by Cancer Research UK as an academic advisor on the project. LC, KO, HG are employed by Cancer Research UK. KO has an honorary research contract at UCL.

## Funding source

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## Contributions

The work was initiated by Cancer Research UK. 20:20 research were commissioned to conduct the follow-up telephone interviews. Data was analysed by AR and interpreted by all authors. AR wrote the manuscript, which was revised in collaboration with LC, KO and HG, who have all seen and approved the final version for publication.

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